

ThreeBond

High Performance Sealant for Display Manufacturing Processes

Main (Edge) Sealant, End Cap Sealant,
Pin Attaching Sealant, Moisture Barrier Sealant,
Anisotropic Conductive Film (ACF),
Anisotropic Conductive Adhesive (ACA).

3025 B.



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EXHIBIT

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Main(Edge) Seal for LCD

UV Curable Epoxy Resin
ThreeBond 30Y-184G, 184H

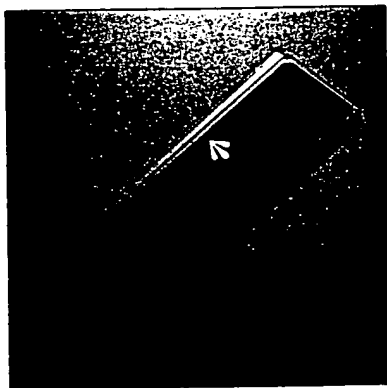
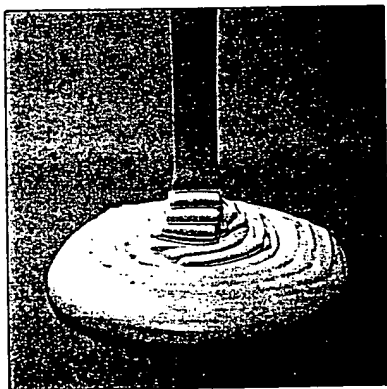
30Y-184 series has been developed for Main(Edge)Sealing application. After applying sealant by dispensing or screen printing, assemble two pieces of glass. Cures in 30-40 sec.

These keep high accuracy gap of the cell. Also these sealants contribute to advanced fine-pitch panel manufacturing process.

■ Main Feature

- ① Single Component UV Cure System On line assembly possible because of shorter cure time than thermal curing epoxy.
- ② Excellent Dimensional Stability.
- ③ Excellent Bonding Strength.
- ④ High Purity.
- ⑤ Low Moisture Permeability. Main Sealant must be made of substances that restrict permeation of moisture as much as possible.
- ⑥ Non Solvent Based System.

■ Container Size:250g Plastic Bottle



End Cap Seal for LCD

UV Curable Resin
ThreeBond 3051, 3052, 3026

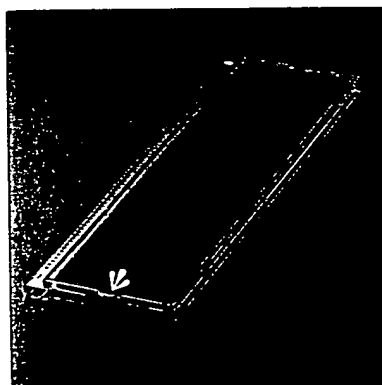
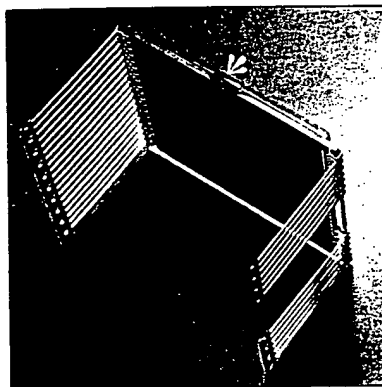
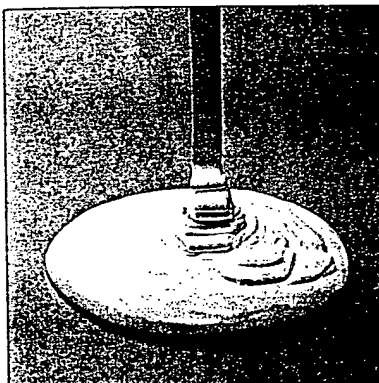
These products have been developed for End Cap Sealing application.

Used for end cap sealing after filling liquid crystal into the cell. Does not contaminate liquid crystal even at uncured stage.

■ Main Feature

- ① Single Component, UV Cure System.
- ② No Contamination with LC.
- ③ Excellent Dimensional Stability.
- ④ Low Moisture Permeability.

■ Container Size:250g Plastic Bottle



Seal for LCD

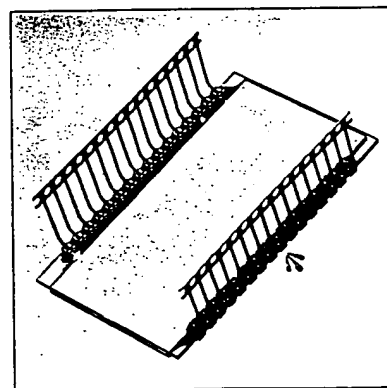
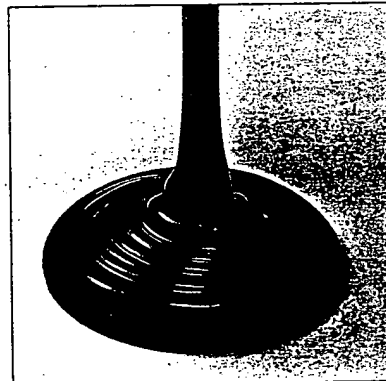
UV Curable Resin
ThreeBond 3050B, 3055B

These products have been developed for Pin Attaching Sealant application. Specifically for attaching pin lead and glass. After curing, it has excellent environmental resistances characteristics.

■ Main Feature

- ① Colored Formulation.
Colored sealant is required for easy confirmation to inspect on the glass.
- ② Quick Curable UV System.
- ③ Excellent Low Temperature Characteristics.
- ④ Excellent Bonding Strength at High Temperature.
- ⑤ High Purity.

■ Container Size:1kg Plastic Bottle



Moisture Barrier Seal

UV Curable Resin ThreeBond 3027B

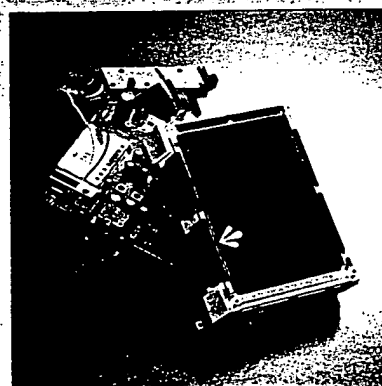
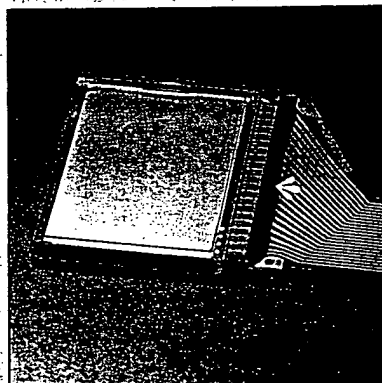
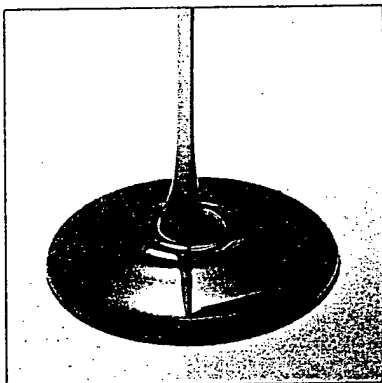
These products have been developed for Moisture Barrier Sealing application.

Used for over-coating on interconnecting area between FPC and ITO electrodes. Contributes to high reliability of panels.

■ Main Feature

- ① High Purity.
- ② Excellent Barrier Characteristics.
- ③ High Repairability.

■ Container Size: 250g, 1kg Plastic Bottle



Anisotropic Conductive Film

Thermoset Type Film & Thermoplastic Type Paste ThreeBond 3370K, 3370G

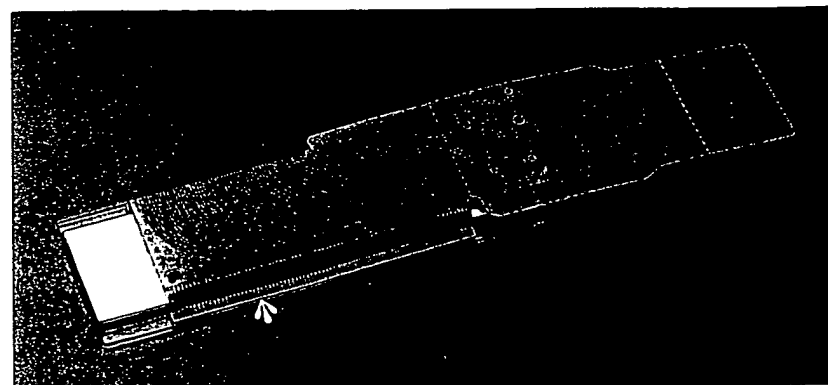
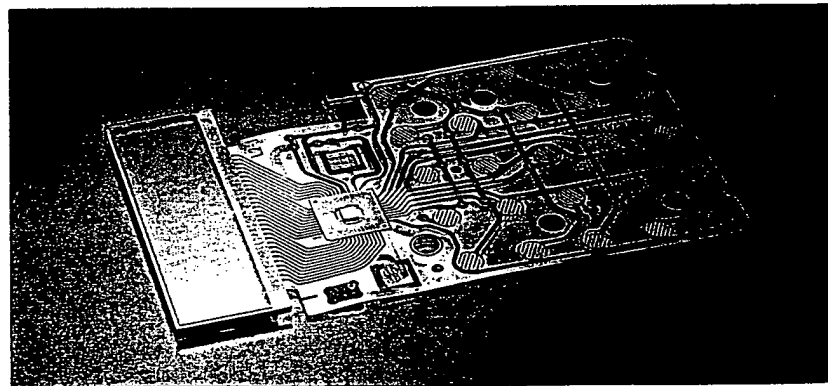
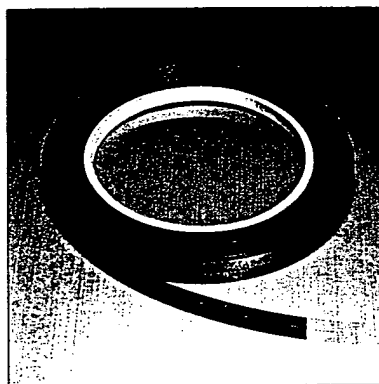
TB3370K has been developed for interconnecting FPC and ITO.

This is an anisotropic conductive thin film. Easy to connect by heat-press.

■ Main Feature

- ① Connect all electrode at once.
- ② Possible to connect 0.1mm pitch.
- ③ Able to connect on areas impossible for soldering.

■ Package Size: 2,3mm x 50M



TB3370G is screen-printable liquid anisotropically conductive paste.

Can apply adhesive layer on fine-pitched circuit board.

■ Main Feature

- ① Connect all electrode at once
- ② Screen printing method widens the application range in term of the electrode size and thickness.

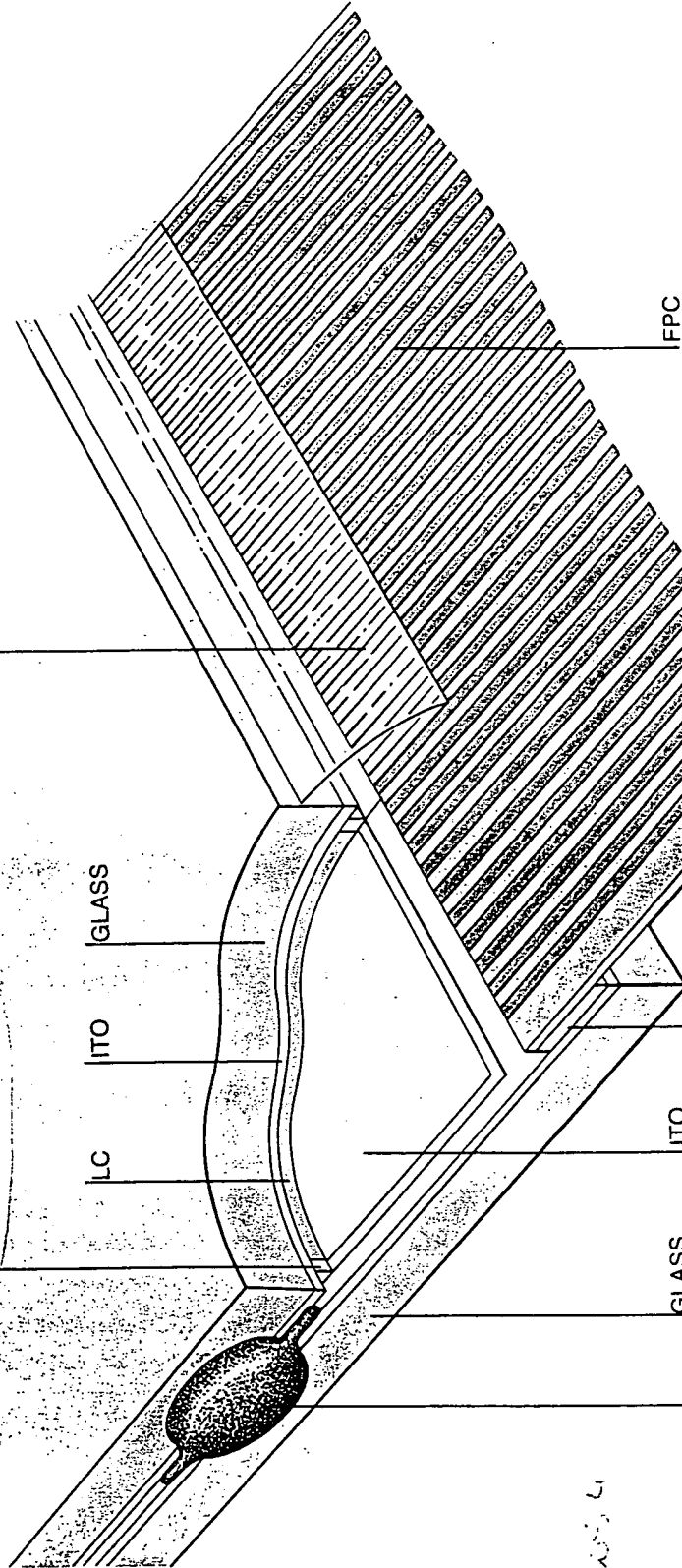
■ Container Size: 200, 500g Plastic Bottle



ThreeBond's LCD Applications

Moisture Barrier Sealant
UV Curable Resin
ThreeBond 3027B

Main(Edge) Seal for LCD
UV Curable Epoxy Resin
ThreeBond 30Y-184G, 184H



Anisotropic Conductive Film
Thermoset Type Film & Thermoplastic Type Paste
ThreeBond 3370K, 3370G

End Cap Seal for LCD
UV Curable Resin
ThreeBond 3051, 3052, 3026

Most important

Comparison manufacturing process between UV curable sealant, ThreeBond 30Y-184 series and thermoset type epoxy resin at Main Seal of LCD.

Conventional one component epoxy needs drying time for solvent volatilization, then another 2-3 hours are needed for full cure. Therefore glass substrate has stress, it is relatively poor for throughput and reliability.

On the other hand ThreeBond's UV Curable Main Sealant can be cured within a minute, making manufacturing time shorter.

The type of after cure necessary requires 1 hour at 90°C, so influence to glass substrate should be minimized to retain the stress.

Therefore cell manufacturing process cannot be done without UV curable main sealant.

UV Curable Sealant ThreeBond 30Y-184 Series	UV + IR Curable Sealant ThreeBond 3025B	Thermoset Type Epoxy One Component, Solvent Type
Screen Print or Dispense	Screen Print or Dispense	Screen Print or Dispense
Leveling	Leveling	Leveling 80~90°C x 1 HR Pre-heat/Solvent Emission
UV PRESS 3,000mj/cm ²	UV PRESS 1,500mj/cm ²	HOT PRESS 160°C x 1 HR
	AFTER CURE 90°C x 1 HR	AFTER CURE 160°C x 1~2 HR
CELL	CELL	CELL

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G.Mgr. Mr. Yamabe

Andy Bain

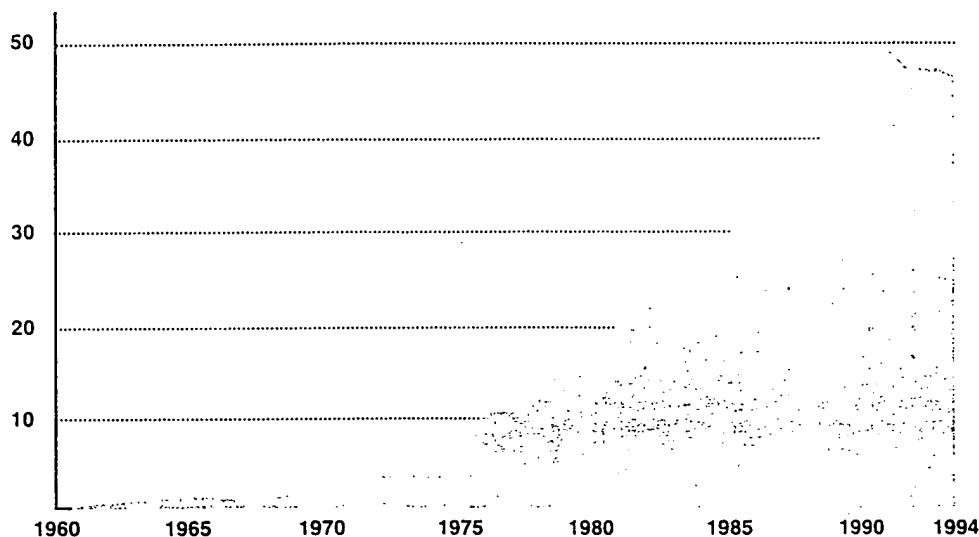
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 INCORPORATION DATE: May 1955
 CHAIRMAN: Osamu Ukumori
 PRESIDENT: Satoru Kaneko

ASSOCIATES: 1,300 (250 outside Japan)
 SALES OFFICES: 135 (15 outside Japan)
 MANUFACTURING PLANTS: 16 (6 outside Japan)

GROUP NET SALES:

¥ billion



HISTORY (MAJOR BUSINESS DEVELOPMENTS):

1955	Company founding Three Bond No. 1 Liquid Gasket	1992	Three Bond Research Center (Cincinnati) Atlanta Branch Office
1960	Solvent type Screw Locking Agent	1993	Seoul Liaison Office
1965	Anaerobic adhesive	1994	Mexico Liaison Office Three Bond Hong Kong UV Silicone UK Division ISO 9002
1969	Cyanoacrylate adhesive	1995	Kuala Lumpur Representative Office Three Bond Co., Ltd. ISO 9001 Three Bond Europe ISO 9002
1973	Three Bond of America	1996	Beijing Liaison Office Shanghai Liaison Office Jakarta Representative Office
1974	Three Bond Do Brasil		
1975	Pre-applied adhesive for fasteners		
1976	Three Bond Europe		
1983	UV adhesive Research Center (Tokyo)		
1985	Australia Branch Office		
1986	Anisotropic electroconductive adhesive Three Bond USA UK Division		
1987	Three Bond International Three Bond Tec. (Singapore)		
1990	Thai Representative Office		
1991	Detroit Branch Office Düsseldorf Representative Office Milan Liaison Office		

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